Year 2 Annual Report
Massachusetts Small MS4 General Permit
Reporting Period: July 1, 2019-June 30, 2020

Please DO NOT attach any documents to this form. Instead, attach all requested documents to an email when submitting the form

Unless otherwise noted, all fields are required to be filled out. If a field is left blank, it will be assumed the requirement or task has not been completed. Please ONLY report on activities between July 1, 2019 and June 30, 2020 unless otherwise requested.

Part I: Contact Information

Name of Municipality or Organization: Department of Conservation and Recreation

EPA NPDES Permit Number: MAR043001

Primary MS4 Program Manager Contact Information

Name: Robert Lowell Title: Deputy Chief Engineer

Street Address Line 1: 251 Causeway Street

Street Address Line 2:

City: Boston State: MA Zip Code: 02114

Email: Robert.Lowell@mass.gov Phone Number: 617.626.1370

Stormwater Management Program (SWMP) Information

SWMP Location (web address): https://www.mass.gov/service-details/dcr-stormwater-management

Date SWMP was Last Updated: Jun 30, 2020

If the SWMP is not available on the web please provide the physical address:

NA

Part II: Self-Assessment

First, in the box below, select the impairment(s) and/or TMDL(s) that are applicable to your MS4. Make sure you are referring to the most recent EPA approved Section 303(d) Impaired Waters List which can be found here: https://www.epa.gov/tmdl/region-1-impaired-waters-and-303d-lists-state

Impairment(s)

☒ Bacteria/Pathogens ☒ Chloride ☒ Nitrogen ☒ Phosphorus
☒ Solids/ Oil/ Grease (Hydrocarbons)/ Metals

TMDL(s)

In State: ☐ Assabet River Phosphorus ☒ Bacteria and Pathogen ☐ Cape Cod Nitrogen
☒ Charles River Watershed Phosphorus ☒ Lake and Pond Phosphorus

Out of State: ☐ Bacteria/Pathogens ☐ Metals ☒ Nitrogen ☐ Phosphorus

Clear Impairments and TMDLs

Next, check off all requirements below that have been completed. ***By checking each box you are certifying that you have completed that permit requirement fully.*** *If you have not completed a requirement leave the box unchecked. Additional information will be requested in later sections.*

Year 2 Requirements

☒ Completed Phase I of system mapping

☒ Developed a written catchment investigation procedure and added the procedure to the SWMP

☐ Developed written procedures to require the submission of as-built drawings and ensure the long term operation and maintenance of completed construction sites and added these procedures to the SWMP

☒ Enclosed or covered storage piles of salt or piles containing salt used for deicing or other purposes

☒ Developed written operations and maintenance procedures for parks and open space, buildings and facilities, and vehicles and equipment and added these procedures to the SWMP

☒ Developed an inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment and added this inventory to the SWMP

☒ Completed a written program for MS4 infrastructure maintenance to reduce the discharge of pollutants

☐ Developed written SWPPPs, included in the SWMP, for all of the following permittee owned or operated facilities: maintenance garages, public works yards, transfer stations, and other waste handling facilities where pollutants are exposed to stormwater

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Development of written SWPPPs was delayed due to impacts of COVID-19. DCR staff was not able to visit facilities due to working remotely and having to prioritize COVID-19 related tasks.
DCR is following the modified permit timeline for development of written procedures for submission of as-

builts.

Annual Requirements

- ☒ Provided an opportunity for public participation in review and implementation of SWMP and complied with State Public Notice requirements
- ☒ Kept records relating to the permit available for 5 years and made available to the public
- ☒ The SSO inventory has been updated, including the status of mitigation and corrective measures implemented
  - ○ This is not applicable because we do not have sanitary sewer
  - ○ This is not applicable because we did not find any new SSOs
  - ○ The updated SSO inventory is attached to the email submission
  - ◉ The updated SSO inventory can be found at the following website:

    https://www.mass.gov/service-details/dcr-stormwater-management (IDDE plan)
- ☒ Properly stored and disposed of catch basin cleanings and street sweepings so they did not discharge to receiving waters
- ☒ Provided training to employees involved in IDDE program within the reporting period
- ☒ All curbed roadways were swept at least once within the reporting period
- ☒ Updated outfall and interconnection inventory and priority ranking as needed

Optional: If you would like to describe progress made on any incomplete requirements listed above, provide any additional information, and/or if any of the above annual requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Bacteria/ Pathogens (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

- ☒ Annual message was distributed encouraging the proper management of pet waste, including noting any existing ordinances where appropriate
- ☒ Permittee or its agents disseminated educational material to dog owners at the time of issuance or renewal of dog license, or other appropriate time
- ☐ Provided information to owners of septic systems about proper maintenance in any catchment that discharges to a water body impaired for bacteria

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Check box 3 is not applicable to DCR as a non-traditional and transportation MS4. No privately-owned septic

systems.

Chloride

Annual Requirements

Public Education and Outreach

☐ Included an annual message in November/ December to private road salt applicators and commercial industrial site owners on the proper storage and application rates of winter deicing material, along with the steps that can be taken to minimize salt use and protect local waterbodies

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Not Applicable. No private salt applicators or commercial/industrial site owners.

Nitrogen (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

☒ Distributed an annual message in the spring (April/May) that encourages the proper use and disposal of grass clippings and encourages the proper use of slow-release fertilizers

☒ Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate

☒ Distributed an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

Potential structural BMPs

☐ Any structural BMPs listed in Table 3 of Attachment 1 to Appendix H already existing or installed in the regulated area by the permittee or its agents was tracked and the nitrogen removal by the BMP was estimated consistent with Attachment 1 to Appendix H. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated nitrogen removed in mass per year by the BMP were documented.

- ○ The BMP information is attached to the email submission
- ○ The BMP information can be found at the following website:

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Per Appendix H requirements for discharges to nutrient-impaired waterbodies, DCR will track and estimate nutrient removal for structural BMPs after developing a list of potential structural BMPs in Permit Year 5.

DCR did work on building the database to hold this BMP treatment information.

Phosphorus (Combination of Impaired Waters Requirements and TMDL Requirements as Applicable)

Annual Requirements

*Public Education and Outreach**

☒ Distributed an annual message in the spring (April/May) encouraging the proper use and disposal of grass clippings and encouraging the proper use of slow-release and phosphorus-free fertilizers

☒ Distributed an annual message in the summer (June/July) encouraging the proper management of pet waste, including noting any existing ordinances where appropriate

☒ Distributed an annual message in the fall (August/September/October) encouraging the proper disposal of leaf litter

** Public education messages can be combined with other public education requirements as applicable (see Appendix H and F for more information)*

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots subject to Permit part 2.3.7.a.iii.(c) to a minimum of two times per year (spring and fall)

Potential structural BMPs

☐ Any structural BMPs already existing or installed in the regulated area by the permittee or its agents was tracked and the phosphorus removal by the BMP was estimated consistent with Attachment 3 to Appendix F. The BMP type, total area treated by the BMP, the design storage volume of the BMP and the estimated phosphorus removed in mass per year by the BMP were documented.

- ○ The BMP information is attached to the email submission
- ○ The BMP information can be found at the following website:

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Per Appendix H requirements for discharges to nutrient-impaired waterbodies, DCR will track and estimate nutrient removal for structural BMPs after developing a list of potential structural BMPs in Permit Year 5. DCR did work on building the database to hold this BMP treatment information.

Solids, Oil and Grease (Hydrocarbons), or Metals

Annual Requirements

Good Housekeeping and Pollution Prevention for Permittee Owned Operations

☒ Increased street sweeping frequency of all municipal owned streets and parking lots to a schedule that targets areas with potential for high pollutant loads

☒ Prioritized inspection and maintenance for catch basins to ensure that no sump shall be more than 50 percent full; Cleaned catch basins more frequently if inspection and maintenance activities indicated excessive sediment or debris loadings

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

Charles River Watershed Phosphorus TMDL

☒ Completed Legal Analysis

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

DCR's analysis determined that from a legal and regulatory perspective, although there are limited regulatory mechanisms available to DCR, such mechanisms are not needed for DCR to "effectively implement the entire PCP" since DCR's is able to control the entirety of its PCP areas. The internal protocols for meeting the PCPs will be included in DCR's Stormwater Handbook.

Lake and Pond Phosphorus TMDL

☒ Completed Legal Analysis

Optional: If you would like to describe progress made on any incomplete requirements listed above or provide any additional details, please use the box below:

DCR's analysis determined that from a legal and regulatory perspective, although there are limited regulatory mechanisms available to DCR, such mechanisms are not needed for DCR to "effectively implement the entire PCP" since DCR's is able to control the entirety of its PCP areas. The internal protocols for meeting the PCPs will be included in DCR's Stormwater Handbook.

Optional: Use the box below to provide any additional information you would like to share as part of your self-assessment:

DCR spent considerable time developing GIS watershed layers for watersheds to impaired segments and for each TMDL this year and updating the impairment information to reflect the 2016 303d list finalized in January 2020. Since DCR is a statewide entity, this comprehensive layer was necessary to identify facilities within each TMDL or draining to impaired waterbodies. DCR also began initial stages of determining pollutant loads for development of Phosphorus Control Plans and initial steps of the Nutrient Source Identification Reports.

Part III: Receiving Waters/Impaired Waters/TMDL

Have you made any changes to your lists of receiving waters, outfalls, or impairments since the NOI was submitted?

- (•) Yes
- ( ) No

If yes, describe below, including any relevant impairments or TMDLs:

Since submitting the NOI, we completed a GIS analysis of DCR-owned and maintained properties in Year 1 and have further refined the list of regulated facilities in Year 2 (provided in the SWMP Appendix A). During Permit Year 2 we also updated the list of receiving waters, impairments, TMDLs, and outfalls (provided in the SWMP Appendix B) based on the Massachusetts Year 2016 Integrated List of Waters released in January 2020.

Part IV: Minimum Control Measures

Please fill out all of the metrics below. If applicable, include in the description who completed the task if completed by a third party.

MCM1: Public Education

Number of educational messages completed **during this reporting period**: 4

*Below, report on the educational messages completed **during this reporting period**. For the measurable goal(s) please describe the method/measures used to assess the overall effectiveness of the educational program.*

BMP: 1-1: Social Media Public Service Messages

Message Description and Distribution Method:

All messages are shared and viewable on DCR's Twitter feed @MassDCR
Fall message about leaf litter pollution and proper collection
Spring message about managing grass clippings and fertilizers
Summer message about dog waste management
SWMP posting message noting updated SWMP and encouraging public's review

Targeted Audience: Visitors, General Public

Responsible Department/Parties: Engineering/External Affairs

Measurable Goal(s):

@MassDCR Twitter account has 21,600 followers
Fall message - 4 retweets/6 likes
Spring message - 3 retweets/5 likes
Summer message - 24 retweets and comments/18 likes
SWMP message - 7 retweets/11 likes

Message Date(s): Summer message 10/2/19, Fall message 10/18/19, Spring message 6/8/2020, SWMP message 11/12/2019

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

Was this message different than what was proposed in your NOI? Yes ◉ No ○

If yes, describe why the change was made:

Social media public service messages have replaced the 'Downstream Newsletter' which has been discontinued.

BMP:1-2: Signs about Not Feeding Gulls

Message Description and Distribution Method:

Continued to post and maintain signs around Wachusett Reservoir informing public not to feed seagulls, as part of an ongoing water quality protection program.

Targeted Audience: Visitors, General Public, Staff

Responsible Department/Parties: Operations

Measurable Goal(s):

Signs are posted at 12 facilities in Leominster, Shrewsbury, Northborough, Clinton, Worcester, Hudson, Holyoke, and Webster

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

BMP:1-3: Stormwater Posters and Brochures

Message Description and Distribution Method:

Displayed educational signage and distributed brochures about water quality and stormwater pollution prevention

Targeted Audience: Visitors, Staff

Responsible Department/Parties: External Affairs

Measurable Goal(s):

Lakes and Ponds/Park Facilities - various kiosks interpretative signage [example - Charles River Reservation: Longfellow Bridge Gravel Wetland Information]
Website - https://www.mass.gov/service-details/brochures-fact-sheets-and-reports

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

BMP:1-4: Dog Waste Management

Message Description and Distribution Method:

Continued to post signs at DCR properties about dog waste management. Provided mutt mitt stations at high-use dog walking areas. Initiated commercial dogwalker permit program. Maintained website with educational materials about dog waste management.

Targeted Audience: Visitors

Responsible Department/Parties: External Affairs/Operations

Measurable Goal(s):

Watershed Protection - Quabbin Reservoir/Ware River/Wachusett Reservoir
Lakes and Ponds/Park Facilities - various kiosks/ mutt-mitt stations/dogwalking permit information
Commercial Dog Walker Permits - 140
Websites: https://www.mass.gov/service-details/brochures-fact-sheets-and-reports
https://www.mass.gov/guides/dogs-in-dcr-parks

Message Date(s): Watershed Protection - ongoing
Lakes and Ponds/Park Facilities/Website - Ongoing
Dog Walking Permit Information - permits issued annually

Message Completed for: Appendix F Requirements ☒ Appendix H Requirements ☒

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

BMP:1-5: Stormwater Management Website

Message Description and Distribution Method:

Posted permit documents to DCR Stormwater Management website
https://www.mass.gov/doc/stormwater-management-plan/download

Targeted Audience: Staff, Visitors, General Public, Designers/Contractors

Responsible Department/Parties: Engineering/External Affairs

Measurable Goal(s):

Number of SWMP Page Views - 490 views
SWMP document downloads - 66 downloads

Message Date(s): Ongoing

Message Completed for: Appendix F Requirements ☐ Appendix H Requirements ☐

Was this message different than what was proposed in your NOI? Yes ○ No ◉

If yes, describe why the change was made:

Add an Educational Message

MCM2: Public Participation

Describe the opportunity provided for public involvement in the development of the Stormwater Management Program (SWMP) **during this reporting period**:

Posted our SWMP online on 9/28/2020 at https://www.mass.gov/service-details/dcr-stormwater-management. No comments were received during this period

Was this opportunity different than what was proposed in your NOI? Yes ○ No ◉

Describe any other public involvement or participation opportunities conducted **during this reporting period**:

Due to COVID-19 our public involvement and participation opportunities noted in the SWMP did not happen during the permit year.

DCR Park Serve Day, originally scheduled for April 25, 2020, was postponed and is tentatively planned to take place mid-autumn 2020, depending on the progression of COVID-19 guidance. Park Serve Day typically includes volunteers picking up litter, pruning vegetation, and planting flower beds at 37 DCR locations (parks, beaches, forests, etc.)

Wachusett Educational Programs were canceled due to COVID-19 concerns. We instead posted Stay at Home Activities on our website: https://www.mass.gov/info-details/wachusett-reservoir-watershed-education-programs

We plan to resume Park Serve Day and the Wachusett Educational Programs in Permit Year 3, if safe to do so.

MCM3: Illicit Discharge Detection and Elimination (IDDE)

Sanitary Sewer Overflows (SSOs)

Check off the box below if the statement is true.

☒ This SSO section is NOT applicable because we DO NOT have sanitary sewer

*Below, report on the number of SSOs identified in the MS4 system and removed **during this reporting period**.*

Number of SSOs identified: 0

Number of SSOs removed: 0

MS4 System Mapping

Below, check all that apply.

The following elements of the Phase I map have been completed:

☒ Outfalls and receiving waters

☒ Open channel conveyances

☒ Interconnections
☒ Municipally-owned stormwater treatment structures
☒ Waterbodies identified by name and indication of all use impairments
☒ Initial catchment delineations

Optional: Describe any additional progress you made on your map during this reporting period or provide additional status information regarding your map:

DCR updated the DCR stormwater drainage database to include layers for all drainage infrastructure elements and inspection records for inlets, outlets, BMPs, and manholes. We are continuously updating and refining our drainage infrastructure mapping as we conduct our infrastructure and maintenance program and IDDE investigation work.

Screening of Outfalls/Interconnections

If conducted, please submit any outfall monitoring results from this reporting period. Outfall monitoring results should include the date, outfall/interconnection identifier, location, weather conditions at time of sampling, precipitation in previous 48 hours, field screening parameter results, and results from all analyses.

○ The outfall screening data is attached to the email submission
◉ The outfall screening data can be found at the following website:

https://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=87a35a2683aa4478a07ade7ffb7c1b2a

*Below, report on the number of outfalls/interconnections screened **during this reporting period**.*

Number of outfalls screened: 1,050

Catchment Investigations

If conducted, please submit all data collected during this reporting period as part of the dry and wet weather investigations. Also include the presence or absence of System Vulnerability Factors for each catchment.

○ The catchment investigation data is attached to the email submission
◉ The catchment investigation data can be found at the following website:

https://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=87a35a2683aa4478a07ade7ffb7c1b2a

*Below, report on the number of catchment investigations completed **during this reporting period**.*

Number of catchment investigations completed this reporting period: 10

*Below, report on the percent of catchments investigated **to date.***

Percent of total catchments investigated: 0.6

Optional: Provide any additional information for clarity regarding the catchment investigations below:

Screening information completed during this reporting period for outfalls with dry weather flow is included in the IDDE Report for Permit Year 2. Catchment investigations were focused on Problem Outfalls with historical or newly identified suspect flows.

IDDE Progress

If illicit discharges were found, please submit a document describing work conducted over this reporting period, and cumulative to date, including location source; description of the discharge; method of discovery; date of discovery; and date of elimination, mitigation, or enforcement OR planned corrective measures and schedule of removal.

- (•) The illicit discharge removal report is attached to the email submission
- ( ) The illicit discharge removal report can be found at the following website:

Below, report on the number of illicit discharges identified and removed, along with the volume of sewage removed ***during this reporting period.***

Number of illicit discharges identified: 0

Number of illicit discharges removed: 0

Estimated volume of sewage removed: 0 gallons/day

Below, report on the total number of illicit discharges identified and removed to date. At a minimum, report on the number of illicit discharges identified and removed ***since the effective date of the permit (July 1, 2018).***

Total number of illicit discharges identified: 0

Total number of illicit discharges removed: 0

Optional: Provide any additional information for clarity regarding illicit discharges identified, removed, or planned to be removed below:

DCR is actively working to follow up on a number of potential illicit discharges observed by DCR or reported to DCR as concerns but we have not verified if the discharges are illicit nor identified their sources. Catchment investigations are in progress. A summary of each investigation is included in the Permit Year 2 IDDE report attached.
DCR was notified by other MS4 owners that there were SSOs onto DCR property. DCR updated the IDDE Plan to reflect these identified SSOs. These were not included in the SSO table above because they are not DCR owned.

Employee Training

Describe the frequency and type of employee training conducted **during the reporting period**:

DCR has provided Stormwater staff training to new employees in April 2020 for IDDE investigations, GIS mapping, SWPPP inspections, and BMP inspections. A department-wide training did not occur this reporting period due to COVID-19.

MCM4: Construction Site Stormwater Runoff Control

Below, report on the construction site plan reviews, inspections, and enforcement actions completed ***during this reporting period.***

Number of site plan reviews completed: 0

Number of inspections completed: 2

Number of enforcement actions taken: 0

Optional: Enter any additional information relevant to construction site plan reviews, inspections, and enforcement actions:

DCR ensures construction site stormwater management through compliance with the NPDES Construction General Permit (GP). DCR includes a bid item and special provisions on construction contracts to be advertised for bid which exceed the one-acre land disturbance threshold. The bid item and special provisions require preparations of a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the Construction GP. The special provisions also reference the construction erosion and sediment control guidelines outlined in DCR's Stormwater Handbook. Inspections and corrective actions are conducted in accordance with the Construction GP and SWPPP. No enforcement actions were required from the 2 site inspections performed this year.

MCM5: Post-Construction Stormwater Management in New Development and Redevelopment

Ordinance or Regulatory Mechanism

Below, select the option that describes your ordinance or regulatory mechanism progress.

- ○ Bylaw, ordinance, or regulations are updated and adopted consistent with permit requirements
- ○ Bylaw, ordinance, or regulations are updated consistent with permit requirements but are not yet adopted
- ◉ Bylaw, ordinance, or regulations have not been updated or adopted

As-built Drawings

Describe the measures the MS4 has utilized to require the submission of as-built drawings and ensure long term operation and maintenance of completed construction sites:

DCR is utilizing as-built drawings to ensure that new or re-constructed drainage infrastructure in included in our MS4 GIS Mapping system. DCR will develop specific as-built submittal requirements in Permit Year 3, in accordance with the modified permit timeline for development of regulatory mechanisms.

Street Design and Parking Lots Report

Describe the status of the street design and parking lots assessment due in year 4 of the permit term, including any planned or completed changes to local regulations and guidelines:

No progress during reporting period. DCR will include street design and parking lot assessments in the Stormwater Handbook, which is planned to be developed in Permit Year 3, in accordance with the modified permit timeline for development of regulatory mechanisms.

Green Infrastructure Report

Describe the status of the green infrastructure report due in year 4 of the permit term, including the findings and progress towards making the practice allowable:

Not applicable to non-traditional MS4s

Retrofit Properties Inventory

Describe the status of the inventory, due in year 4 of the permit term, of permittee-owned properties that could be modified or retrofitted with BMPs to mitigate impervious areas and report on any properties that have been modified or retrofitted:

No progress during reporting period

MCM6: Good Housekeeping

Catch Basin Cleaning

Below, report on the number of catch basins inspected and cleaned, along with the total volume of material removed from the catch basins ***during this reporting period****.*

Number of catch basins inspected: 1,439

Number of catch basins cleaned: 1,203

Total volume or mass of material removed from all catch basins: 1,325 tons

Below, report on the total number of catch basins in the MS4 system.

Total number of catch basins: 8,319

If applicable:

Report on the actions taken if a catch basin sump is more than 50% full during two consecutive routine inspections/cleaning events:

If CB sump has been reported as more than 50% full after two yearly visits, notation will be made to visit twice a year.

Street Sweeping

Report on street sweeping completed ***during this reporting period*** *using one of the three metrics below.*

○ Number of miles cleaned:

◉ Volume of material removed: 1,245 cubic yards

○ Weight of material removed: [Select Units]

O&M Procedures and Inventory of Permittee-Owned Properties

Below, check all that apply.

The following permittee-owned properties have been inventoried:

☒ Parks and open spaces
☒ Buildings and facilities
☒ Vehicles and equipment

The following O&M procedures for permittee-owned properties have been completed:

☒ Parks and open spaces
☒ Buildings and facilities
☒ Vehicles and equipment

Stormwater Pollution Prevention Plan (SWPPP)

Below, report on the number of site inspections for facilities that require a SWPPP completed ***during this reporting period.***

Number of site inspections completed: 2

Describe any corrective actions taken at a facility with a SWPPP:

No corrective actions taken during reporting period.

Additional Information

Monitoring or Study Results

Results from any other stormwater or receiving water quality monitoring or studies conducted during the reporting period not otherwise mentioned above, where the data is being used to inform permit compliance or permit effectiveness must be attached.

◉ Not applicable
○ The results from additional reports or studies are attached to the email submission
○ The results from additional reports or studies can be found at the following website(s):

If such monitoring or studies were conducted on your behalf or if monitoring or studies conducted by other entities were reported to you, a brief description of the type of information gathered or received shall be described below:

Additional Information

Optional: Enter any additional information relevant to your stormwater management program implementation during the reporting period. Include any BMP modifications made by the MS4 if not already discussed above:

DCR developed a SWPPP template to use for our facilties requiring SWPPPs and a GIS based mobile application for staff to use while performing SWPPP site inspections.

DCR completed a cleanup of floating debris on the Muddy River in November 2019, removing 6 tons of material.

COVID-19 Impacts

Optional: If any of the above year 2 requirements could not be completed due to the impacts of COVID-19, please identify the requirement that could not be completed, any actions taken to attempt to complete the requirement, and reason the requirement could not be completed below:

Development of individual SWPPPs and performing SWPPP inspections were delayed due to COVID-19.

Volume of material collected during street sweeping is less than last year due to shorter timeframe (last reporting period was 15 months) and DCR not implementing our daytime "tag & tow" program due to COVID-19, resulting in DCR sweeping around parked cars and not being being to sweep curb to curb.

Activities Planned for Next Reporting Period

Please confirm that your SWMP has been, or will be, updated to comply with all applicable permit requirements including but not limited to the year 3 requirements summarized below. (Note: impaired waters and TMDL requirements are not listed below)

Yes, I agree ☒

- Inspect all outfalls/ interconnections (excluding Problem and Excluded outfalls) for the presence of dry weather flow
- Complete follow-up ranking as dry weather screening becomes available

Annual Requirements

- Annual report submitted and available to the public
- Annual opportunity for public participation in review and implementation of SWMP
- Keep records relating to the permit available for 5 years and make available to the public
- Properly store and dispose of catch basin cleanings and street sweepings so they do not discharge to receiving waters
- Annual training to employees involved in IDDE program
- Update inventory of all known locations where SSOs have discharged to the MS4
- Continue public education and outreach program
- Update outfall and interconnection inventory and priority ranking and include data collected in

connection with the dry weather screening and other relevant inspections conducted
- Implement IDDE program
- Review site plans of construction sites as part of the construction stormwater runoff control program
- Conduct site inspection of construction sites as necessary
- Inspect and maintain stormwater treatment structures
- Log catch basins cleaned or inspected
- Sweep all uncurbed streets at least annually
- Continue investigations of catchments associated with Problem Outfalls
- Review inventory of all permittee owned facilities in the categories of parks and open space, buildings and facilities, and vehicles and equipment; update if necessary

Provide any additional details on activities planned for permit year 3 below:

Part V: Certification of Small MS4 Annual Report 2020

40 CFR 144.32(d) Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Jim Montgomery Title: Commissioner

Signature: Date: 9/24/2020

[Signatory may be a duly authorized representative]

Illicit Discharge Detection and Elimination (IDDE) Report

Permit Year 2

PREPARED FOR

dcr
Massachusetts

PREPARED BY

vhb

101 Walnut Street
PO Box 9151
Watertown, MA 02471
617.924.1770

September 28, 2020

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1

Executive Summary

This Illicit Discharge Detection and Elimination (IDDE) Report for Permit Year 2 (July 1, 2019-June 30, 2020) has been developed by VHB for the Massachusetts Department of Conservation and Recreation (DCR) to track progress towards the requirements of the United States Environmental Protection Agency's (EPA) 2016 National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts, hereafter referred to as the "2016 Massachusetts MS4 Permit" or "MS4 Permit."

This report documents progress of the IDDE program, developed to fulfill Minimum Control Measure 3 of the MS4 Permit. The goal of the IDDE program is for DCR to systematically identify and eliminate sources of non-stormwater discharges to its storm sewer system and implement procedures to prevent such discharges.

Activities under the IDDE program include outfall/ interconnection screening, catchment investigations, and illicit discharge removal. During this permit year, the IDDE program tasks completed included outfall/ interconnection screening in dry weather and catchment investigations focused on Problem Outfalls performed by the Project Team of VHB and subconsultant Stacy DePasquale Engineering, Inc (SDE). The Project Team did not complete wet weather screening and, while potential illicit discharges were followed up on, no illicit discharge removal was necessary.

Table 1 summarizes the screening conducted in Permit Year 2.

Table 1 Permit Year 2 Screening and Sampling Summary

		Fall	Spring	Total
	Regulated Outfalls			**1,641**
Dry Weather	Outfall Screened	567	485	1,052
	Outfalls with Flow	28	25	53
Wet Weather	Outfall Screened	0	0	0
	Outfalls with Flow	0	0	0
Catchment Investigations	Problem Outfall Investigations Performed	3	4	7
	High/Low Outfall Investigations Performed	0	0	0
Illicit Discharges	Discharges Identified	0	0	0
	Gallons Removed	0	0	0

As required by the permit, each outfall was categorized as problem, high, low or exempt outfalls as part of the Year 1 update to the IDDE plan. These categories were reviewed to reflect results from this year's sampling to update priorities prior to performing catchment investigations. **Table 2** summarizes the updated outfall prioritization.

Table 2 Outfall Prioritization

Prioritization Category	# of Outfalls
Historical Problem	7
New Problem	8
High	1,186
Low	288
Exempt	152
Total	1,641

The Permit Year 2 catchment investigations included outfalls which were identified by DCR in Permit Year 1 as problem outfalls (historical problem outfalls in table above). These 7 outfalls prioritized for catchment investigation were outfalls to Stacey Brook in Lynn and Swampscott (2 outfalls), Morrissey Boulevard in Quincy (1 outfall), Tenean Beach in Quincy, and Wollaston Beach (3 outfalls) in Quincy. An additional 4 outfalls at Wollaston Beach were investigated but determined to be the City of Quincy's. DCR and VHB/SDE have performed extensive follow up on these outfalls and have either determined that the flow is from municipal interconnections and are working with the municipality to follow up, identified the likely source of flow as groundwater and capped the pipes, or are still chasing the possible illicit discharge. No illicit discharge was formally identified and/or removed.

2

Outfall/Interconnection Screening

In accordance with the MS4 Permit, DCR has ranked outfalls as Problem, High Priority, Low Priority or Excluded. This ranking determines the priority order for screening outfalls and interconnections pursuant to part 2.3.4.7.b of the MS4 Permit. The outfall screening in Permit Year 2 focused on Dry Weather Screening. A total of 1,052 outfalls were screened for the presence of dry weather flow in Permit Year 2. Dry weather flow[1] is a common indicator of potential illicit connections. The MS4 Permit requires all outfalls and/or interconnections (excluding Problem and Excluded Outfalls) to be screened for the presence of dry weather flow. Wet weather screening is also required if there are any System Vulnerability Factors (SVFs) in a given catchment. Wet weather screening was not conducted in Permit Year 2 since the focus was on meeting the more near-term dry weather screening deadline (end of Permit Year 3) and following up on Problem Outfall catchment investigations.

2.1 Dry Weather Screening and Sampling

This section summarizes the dry weather screening completed by VHB's subconsultant SDE in Fall 2019 and Spring 2020 to support DCR's compliance with the IDDE investigation requirements in the MS4 Permit (Section 2.3.4.7.b). The goal of outfall screening was to identify outfalls with dry weather flow, sample for the required parameters, and review the priority ranking of the outfall based on sampling results. Outfalls meeting likely sewer input indicators[2] were prioritized at the top of the High Priority list for follow-up. Due to the

[1] Dry weather flow is defined as flow occurring when no more than 0.1 inches of rainfall has occurred in the previous 24-hour period and no significant snow melt is occurring.

[2] As defined in the MS4 permit, likely sewage input indicators are any of the following:

statewide nature of the outfalls we have developed a webmap[3] for showing the location of the areas investigated (for more information on outfall-specific locations, please contact DCR Stormwater Unit).

Table 3 Dry Weather Screening and Sampling

	Fall	Spring	Total	% of Total
Outfall Screened	567	485	1,052	64%
Outfalls with Dry Weather Flow	28	25	53	5%

The outfalls were visited when no more than 0.1 inches of rainfall had occurred in the previous 24-hour period and no significant snow melt was occurring. Dry weather screening will resume again in summer 2020 and be completed by the end of Permit Year 3 (June 2021). SDE captured samples at the flowing outfalls to conduct water quality sampling, as specified in the MS4 Permit.

In accordance with procedures indicated in DCR's IDDE Plan developed to meet the requirements in the MA MS4 permit (Section 2.3.4.7.b.iii.4.b), SDE took both field measurements and collected samples for lab analysis. SDE performed field measurements for ammonia, chlorine, conductivity, salinity, surfactants (detergents), and temperature. The MS4 permit also states that samples shall be analyzed for *Escherichia coli* (E. coli) for outfalls discharging to a freshwater receiving waterbody or *Enterococcus* for a saline or brackish receiving waterbody and the receiving waterbody's pollutant of concern.[4] The samples were lab analyzed for *E. coli* or *Enterococcus* and the applicable pollutants of concern. SDE used a field probe to measure dissolved oxygen if it was an applicable pollutant of concern.

Table A-1 in **Appendix A** summarizes the field and lab sample results for the outfalls with dry weather flow. The remainder of the outfalls screened had no dry weather flows.

2.2 Outfall Prioritization Categories Review

The results of dry weather screening must be reviewed and used to update the outfall prioritization categories each year as part of the annual report. For outfalls with no dry weather flow the outfall remained in the same priority category. For outfalls with dry weather flow, VHB and SDE reviewed the results and recommend next steps based on sampling results, the sewage indicator criteria included in the MS4 permit, and DCR's IDDE plan. This

- Olfactory or visual evidence of sewage,
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine (0.02 mg/L).

[3] IDDE Report Webmap address: https://vhb.maps.arcgis.com/apps/webappviewer/index.html?id=87a35a2683aa4478a07ade7ffb7c1b2a

[4] Where the discharge is directly into a water quality limited water or a water subject to an approved TMDL as indicated in Appendix F of the MS4 permit; the sample shall be analyzed for the pollutant of concern identified as the cause of the impairment as specified in Appendix G of the MS4 permit.

review included determining if a higher priority category was appropriate for a particular outfall. Recommended next steps fall into the following categories:

- Problem Outfalls: Catchment Investigation Prioritized
- High Priority: Move on to Catchment Investigation
- Low Priority: Move on to Catchment Investigation

Table 4 Outfall Prioritization

Prioritization Category	# of Outfalls
Problem	15
High	1,186
Low	288
Exempt	152
Total	1,641

2.2.1 Problem Outfalls

Seven (7) outfalls were identified as Problem Outfalls in Permit Year 1 as part of historical issues and thus were not screened pursuant to part 2.3.4.7.b of the permit which indicates that the issue should be resolved before dry weather screening is performed. These outfalls are discussed in **Section 3, Catchment Investigations.**

The dry weather outfall screening this year identified eight (8) additional outfalls which were moved into the Problem Outfall category after review of the dry weather sampling results. VHB/SDE determined that these outfalls have potential sewage input based on the permit IDDE criteria and therefore should be prioritized for further investigation. These follow-up investigations which will include review of upstream structures and identification of the potential source(s) should be rolled into the initial stages of the catchment investigations and performing the wet weather sampling. The catchment investigations and wet weather sampling, if appropriate, need to be completed by Year 7 (July 2025) for Problem Outfalls.[5]

2.2.2 High Priority

VHB/SDE identified 45 outfalls that have slightly elevated concentrations of pollutants but do not exceed the MS4 permit sewage indicator criteria. Each of these outfalls had been classified as High Priority and VHB/SDE recommends that these outfalls remain categorized as such. The remainder of the High Priority outfalls screened this year either had no flow or results did not indicate elevated concentrations of pollutants but due to the listed impairments of the receiving waters these outfalls will remain classified as High Priority. DCR is required to complete catchment investigation of High Priority catchments and perform wet weather sampling, if appropriate, within 10 years of the permit effective date (July 1, 2027).

[5] MS4 Permit Section 2.3.4.8.a

2.2.3 Low Priority

The remainder of outfalls screened this year were categorized as Low Priority and did not indicate signs of illicit connections. Therefore, these outfalls remain categorized as Low Priority[6]. Catchment investigations for low priority outfalls must be completed within 10 years of the permit effective date (July 1, 2027).

2.2.4 Exempt

Outfalls/interconnections with no potential for illicit discharges may be excluded from the IDDE program. The permit identifies that drainage from the following categories below can be excluded:

- Roadway drainage in undeveloped areas with no dwellings and no sanitary sewers,
- Drainage for athletic fields, parks, or undeveloped green space and associated parking without services, or
- Cross-country drainage alignments (that neither cross nor are in proximity to sanitary sewer alignments) through undeveloped land.

DCR has identified outfalls to be excluded from the IDDE program as they are located away from presumed sanitary sewer systems, in undeveloped areas based on land use, and not in proximity to DCR building with restrooms. DCR will continue to refine excluded outfall status through catchment investigations and GIS analysis.

2.3 Wet Weather Screening and Sampling

Where a minimum of one system vulnerability factor (SVF) is identified based on previous information or the catchment investigation, a wet weather investigation must also be conducted at the associated outfall. No wet weather sampling occurred during Permit Year 2. However, VHB and SDE began screening locations to identify SVFs. It is anticipated that wet weather screening will begin in Permit Year 3.

[6] MS4 Permit Section 2.3.4.7.c.i

3

Catchment Investigations

DCR must perform catchment investigations on all non-excluded outfalls as part of the IDDE program. Catchment investigations in Permit Year 2 focused on Problem Outfalls, which include outfalls/interconnections with known or suspected contributions to illicit discharges. In accordance with the MS4 Permit, Problem Outfall investigations must begin within two (2) years of the permit effective date and be completed within seven years of the permit effective date. DCR began/ continued review of all the known Problem Outfalls. The permit requires that all catchment investigation be completed by Permit Year 10.

Table 5 Catchment Investigations Completed

	Permit Year 2
Problem	1
High Priority	0
Low Priority	0

3.1 Problem Catchment Investigations

Before the permit took effect, DCR had identified problem outfalls in four areas based on historic information or ongoing issues identified. Catchments associated with these areas were prioritized for investigation as noted below.

- Stacey Brook, Lynn and Swampscott
- Morrissey Boulevard, Quincy

- Tenean Beach, Quincy
- Wollaston Beach, Quincy

For the catchment investigations the field crews investigated the systems by opening key junction manholes upstream of the outfalls. Data pertaining to interconnections and unmapped pipes were recorded by the field team. Water sample were taken if flow was observed in a particular pipe. If a pipe was dry, a sandbag was placed for a minimum of 48 hours to capture intermittent flows. The field crew sampled for parameters including temperature, conductivity, pH, salinity, ammonia, chlorine, and surfactants as outlined in DCR's IDDE Plan. All samples collected during the field investigation were also sent to the lab to be tested for *Enterococcus*.

Table 6 High Priority Catchment Investigations Status

	Permit Year 2
Underway	6
Completed	1
Other*	4

*Outfalls were determined to be another MS4s outfall

3.1.1 Stacey Brook

The storm drainage area, comprised of two (2) outfalls under review, is located around Stacey Brook in Lynn and Swampscott, MA. Stacey Brook flows underground through a 6-foot culvert and discharges through an outfall on Red Rock Beach and ultimately into Nahant Bay. There is a second outfall adjacent to the first. DCR's drainage network to these outfalls is mostly limited to Lynn Shore Drive, Red Rock Beach, and the landscaped areas between the roadway and beach; it also includes a portion of Eastern Ave and Humphrey Street. These outfalls were flagged as Problem Outfalls based on previous sampling results indicating high bacteria (both *E. Coli* and *Enterococcus*) as well as the presence of pharmaceutical indicators that suggested the presence of human waste.

The dry weather investigation occurred over several days in May and June 2019. Based on sampling results, the area of interest was narrowed to the infrastructure along Humphrey Street in Swampscott. This infrastructure was CCTVed and an illicit connection to DCR's infrastructure was not readily identified but the dry weather flows continued to show elevated parameters. Based on the investigation it was determined that the flow could be coming from one of the Swampscott residences adjacent to the area of interest. DCR sent a letter to the Town of Swampscott in November 2019 with a summary of the sampling results and recommended next steps to dye-test several Swampscott residences. COVID remote working impacted DCR's meeting with Swampscott and DCR is still working with Swampscott to investigate and remove, if applicable, the source so DCR can perform follow up testing.

The second outfall, located in Lynn, will be screened for potential SVFs and if present, wet weather screening will be conducted before considering this catchment investigation complete.

3.1.2 Morrissey Boulevard

The storm drainage system is located along Morrissey Boulevard in Quincy, MA and includes one (1) outfall. The outfall drains to the mouth of the Neponset River and ultimately Dorchester Bay. This outfall was flagged as a Problem Outfall based on previous sampling results from both the Boston Water and Sewer Commission (BWSC) and DCR showing elevated levels of *Enterococcus*. BWSC shares sampling data with DCR on an annual basis in locations where its system interconnects with DCR's system.

The dry weather investigation occurred over several days in July 2019. Based on sampling results, the areas of interest were narrowed to the intersection of Morrissey Boulevard and Tenean Street and near the intersection of Morrissey Boulevard and McKone Street. DCR performed follow-up investigations of the infrastructure in the areas of interest and bricked off the connections from several pipes that were identified during CCTV investigation but not included on the map and were confirmed to be abandoned by CCTV investigation.

In order to further confirm the source of the dry weather flow and since there are BWSC sewer lines intersecting the DCR stormwater infrastructure DCR reached out to BWSC in November 2019 with a summary of sampling results and a request to share information and investigate some of the adjacent sewer lines. DCR is awaiting a response from this request and COVID delayed following up with them. Further investigation and possible sampling to further narrow down the dry weather flow will be needed before DCR can move on to wet weather sampling and complete this catchment investigation.

3.1.3 Tenean Beach

The storm drainage system is located immediately south of Tenean Beach in Quincy, MA. The system extends from the parking area and through the park to one (1) outfall draining to the mouth of the Neponset River and ultimately Dorchester Bay. This outfall was flagged as a Problem Outfall based on previous sampling results showing elevated levels of *Enterococcus*.

The dry weather investigation occurred over several days in July 2019, September 2019, and February 2020. The July 2019 investigation narrowed the areas of interest to two previously unmapped pipes and two (2) catch basins. DCR determined the two unmapped pipes were no longer in use and these were capped. The catch basins and surrounding infrastructure were reviewed by DCR staff and it was confirmed that there were no illicit connections. DCR then cleaned the entire drainage system. Samples were taken from two (2) catch basins in September 2019 following the cleaning and sampling results showed a decrease in *Enterococcus*.

To close out the problem outfall catchment investigation per the permit, the outfall was sampled in February 2020, which was the soonest available dry weather screening window, to conduct sampling after DCR conducted all follow-up actions. Since sampling results at the outfall did not exceed MS4 sewer input indicators and no SVFs have been identified in this area to require wet weather screening, the outfall catchment investigation for this drainage system is now considered complete.

3.1.4 Wollaston Beach

There were seven (7) outfalls investigated along Wollaston Beach in Quincy, MA. The infrastructure for each of the catchments was generally along Quincy Shore Drive and the beach. All of the outfalls drain directly to Quincy Bay. These outfalls were flagged as Problem Outfalls based on previous sampling results showing elevated levels of *Enterococcus*.

The dry weather investigation occurred in November 2019 and February 2020. The November investigation was cut short due to weather and the next favorable weather window was not until February 2020. The November and February investigations narrowed the area of interest to two (2) outfalls with the remaining five (5) not showing signs of potential illicit discharges based on the sewer input indicators outlined in the MS4 Permit. DCR performed follow-up structure investigations including CCTV and cleaning of the two (2) systems. No illicit connections were identified during these follow-up investigations.

Additionally, four (4) outfalls were determined to be City of Quincy outfalls, including the two (2) outfalls with potential illicit discharges. The ownership of these outfalls has been updated in DCR's database and removed as MS4 outfalls. DCR will follow-up with the City of Quincy to share sampling results.

This catchment investigation is not yet considered complete. For the outfalls determined to be the City of Quincy, DCR may need to re-sample the interconnection point between DCR's infrastructure and the City of Quincy's infrastructure. Finally, pending identification of SVFs, wet weather screening may need to be completed. The dry weather investigation for the three (3) outfalls confirmed as DCR's is now considered complete.

3.2 High Priority Catchment Investigations

In Permit Year 2, DCR focused on investigating the historical Problem Outfalls discussed above. Although there were no High Priority catchment investigations completed, DCR did finalize its catchment investigation procedures as documented in its IDDE Plan and has continued to refine the priority ranking of outfalls through dry weather outfall screening.

3.3 Low Priority Catchment Investigations

There were no Low Priority catchment investigations completed in Permit Year 2 since DCR was focused on investigating the historical Problem Outfalls discussed above. DCR did finalize its catchment investigation procedures as documented in its IDDE Plan and has continued to refine the priority ranking of outfalls through dry weather outfall screening.

3.4 Confirmation of Illicit Discharges Removed Catchment Investigations

DCR is still working to pinpoint the source of the dry weather discharges with potential illicit flows as described above. Since no illicit discharges were found and removed during Permit Year 2 DCR did not perform any confirmation investigations, which make sure that the

removal of that discharge addressed the problem and there are no other potential illicit discharges. In future years, this section will report on the follow-up sampling.

4

Illicit Discharge Removal

As detailed in **Section 3, Catchment Investigations,** DCR is in the process of conducting Problem Outfall investigations. DCR was able to narrow the area of interest for each of the Problem Outfall catchments but have not confirmed that there is an illicit discharge. In future years, this section will report on the number of illicit discharges removed and provide the following details for each discharge:

- Location,
- Description of the discharge,
- Method and date of discovery,
- Date of elimination,
- Mitigation or enforcement action or planned corrected measures and schedule for completing the illicit discharge removal, and
- Estimated gallons of flow removed.

Table 7 Illicit Discharge Removal

	Permit Year 2	Overall Program
# of Illicits Located	0	0
# of Illicits Removed	0	0
Estimated Illicit Flow Removed (gal)	0	0

Appendices

Appendix A – Dry Weather Screening Results

Table A-1: Permit Year 2 Dry Weather Investigation Results for Systems with Flow

Outfall ID	Location	Receiving Waterbody Name and ID	PY 1 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***> 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
Problem Outfall: Follow-up Catchment Investigation Prioritized																				
34608.30	Off Greenough Blvd. Wetlands nearby.	Charles River MA72-36	High	10/16/19	59.0	4.18	7.32	2.2	**4.0**	0.00	**0.75**	**370**	0.031	-	-	7.6	<1.6	-	Clear flow, no odor	Exceeded sewage input indicators suggest potential illicit discharge.
21979.00	Off Fellsway near Mystic River Reservation	Mystic River MA71-02	High	5/28/2020	19.1	2690	8.01	1.4	**0.8**	0.00	**0.75**	**680**	0.074	-	-	7.11	-	2	Cloudy Flow, Musty odor	Exceeded sewage input indicators suggest potential illicit discharge.
27645.00	Off Mystic View Road near Gateway Park	Malden River MA71-05	High	6/3/2020	20.3	4170	8.05	2.2	**10.0**	**1.06**	**0.75**	90	0.626	-	150	6.81	-	-	Clear Flow, Sheen/Scum Present, No Odor	Exceeded sewage input indicators suggest potential illicit discharge.
27646.00	Off Mystic View Road near Gateway Park	Malden River MA71-05	High	6/3/2020	19.6	3.5	7.85	0	**0.6**	**0.21**	**0.50**	**720**	2.470	-	-	10.77	-	38	Clear Flow, No Odor	Exceeded sewage input indicators suggest potential illicit discharge.
22021.00	Off Mystic Valley Parkway near Mystic River Reservation	Mystic River MA71-02	High	6/3/2020	20.1	5840	7	3.1	**6.0**	**0.40**	**1.00**	**550**	0.555	<0.004	-	3.59	-	-	Clear Flow, Sheen/Scum Present, No Odor	Exceeded sewage input indicators suggest potential illicit discharge.
22724.00	Off Mystic Valley Parkway near Mystic River Reservation	Mystic River MA71-02	High	6/3/2020	19.9	860	7.41	0.4	**10.0**	**0.95**	**2.00**	**>80,000**	4.49	<0.004	-	4.43	-	-	Cloudy Flow, Sheen/Scum Present, Sharp, pungent odor	Exceeded sewage input indicators suggest potential illicit discharge.
22018.00	Off Mystic Valley Parkway near Mystic River Reservation	Unnamed Tributary MA71-13	High	6/4/2020	21.1	3520	8.02	1.8	**0.8**	**0.14**	**1.00**	**320**	-	-	-	-	-	-	Cloudy Flow, No Odor	Exceeded sewage input indicators suggest potential illicit discharge.

Outfall ID	Location	Receiving Waterbody Name and ID	PY 1 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***> 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
38008.00 (MH6666667463)	Off Ocean Ave near Revere St	Lynn Harbor MA93-53	High	6/23/2020	19.1	999	6.78	999	0	**0.34**	**2**	**-**	-	-	>80,000	-	-	-	Sample taken at upstream manhole 6666667463.	
High Priority: Move on to Catchment Investigation																				
19067.00	Off Greenough Blvd, wetlands and clay-capped landfill nearby.	Charles River MA72-36	High	10/21/19	61.9	1.82	7.55	0.9	**4.0**	0.00	**0.50**	<10	0.035	-	-	3.3	<1.4	-	Tan to light brown cloudy flow, no odor	Results do not exceed the sewage indicator criteria, but ammonia and surfactants higher than expected stormwater with observation of colored cloudy flow indicates some follow up should be done before moving to potential wet weather sampling if SVFs are identified.
16506.00	Off Soldiers Field Rd, downstream of intersection with Arsenal St.	Charles River MA72-36	High	10/16/19	64.2	5.00	6.59	2.7	**10.0**	0.00	**1.50**	<10	1.35	-	-	7.4	<1.6	-	Tea/coffee cloudy flow, no odor; sheen/scum present, oily sheen and mineral deposits	Results do not exceed the sewage indicator criteria, but ammonia and surfactants higher than expected stormwater values and observation of cloudy flow with sheen/scum indicates some follow up should be done before moving to potential wet weather sampling.
19074.00	Off Greenough Blvd, across the street from Cambridge Cemetery.	Charles River MA72-36	High	10/15/19	68.0	6.29	6.96	3.5	**4.0**	0.00	**0.50**	20	0.197	-	-	1.9	<1.6	-	Clear flow, no odor; sheen/scum present, iron bacteria	Results do not exceed the sewage indicator criteria, but ammonia and surfactants higher than expected stormwater values and observation of sheen/scum indicates some follow up should be done before moving to potential wet weather sampling.
19073.00	Off Greenough Blvd, across the street from Cambridge Cemetery.	Charles River MA72-36	High	10/15/19	62.4	2.72	8.06	1.3	**3.0**	0.00	**0.25**	30	0.188	-	-	2.4	<1.6	-	Clear flow, no odor; sheen/scum present, iron bacteria	Results do not exceed the sewage indicator criteria, but ammonia and surfactants higher than expected stormwater values and observation of sheen/scum indicates some follow up should be done before moving to potential wet weather sampling.

Outfall ID	Location	Receiving Waterbody Name and ID	PY 1 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***> 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
19326.00 (sample 1)	Off Storrow Dr, near the esplanade outdoor gym.	Charles River MA72-38	High	10/2/19	72.3	3.36	7.31	1.8	**4.0**	0.00	**0.50**	10	0.73	-	-	6.2	-	<2	-	Could not locate outfall – sample taken at MH19816.00 which is just upstream of outfall location on maps.
19326.00 (sample 2)	Off Storrow Dr, near the esplanade outdoor gym.	Charles River MA72-38	High	10/2/19	70.7	2.20	7.49	1.0	**3.0**	0.00	**0.25**	50	1.38	-	-	4.5	-	<2	-	Could not locate outfall – sample taken at MH19791.00 which is just upstream of outfall location on maps.
19634.00	Off Storrow Drive, near Hatch Memorial Shell.	Charles River MA72-38	High	10/1/19	65.5	2.02	7.05	1.0	**2.0**	0.00	**0.50**	20	0.453	-	-	9.2	-	<2	Clear flow, no odor	
18956.00	Off Storrow Drive, between Anderson Memorial Bridge and John W. Weeks Footbridge.	Charles River MA72-36	High	10/7/19	73.2	4.46	7.25	2.4	**4.0**	0.00	**0.25**	190	0.183	-	-	8.0	<1.6	-	Cloudy flow, no odor	
18985.00	Off Greenough Blvd, near the Winsor Belmont Hill Boathouse.	Charles River MA72-36	High	10/15/19	68.4	2.63	7.45	1.3	**5.0**	0.00	0.00	<10	0.122	-	-	5.6	<1.6	-	-	
19132.00	Off Pleasant St, upstream of Charles River Greenway Bridge.	Charles River MA72-07	High	10/21/19	61.0	0.82	6.71	0.4	0.0	0.00	0.00	**1,800**	0.044	-	-	-	-	-	Clear flow, no odor	E. coli elevated levels could be due to dog or bird waste.
19130.00	Off Charles River Rd, near Watertown Riverfront Park.	Charles River MA72-36	High	10/21/19	60.8	2.09	7.25	1.1	0.0	0.00	0.00	**1,800**	0.039	-	-	7.8	<1.4	-	Clear flow, no odor	E. coli elevated levels could be due to dog or bird waste
21250.00	From Community Rowing parking lot, by Daly Field.	Charles River MA72-36	High	10/21/19	66.6	1.59	7.60	0.8	**2.0**	0.00	**0.25**	<10	0.122	-	-	7.5	<1.4	-	Light yellow flow, no odor	

Outfall ID	Location	Receiving Waterbody Name and ID	PY 1 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***> 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
19307.00	Off Storrow Dr, downstream of Boston University Bridge.	Charles River MA72-38	High	10/1/19	66.6	1.40	7.54	0.7	**0.6**	0.00	0.00	10	1.38	-	-	8.0	-	<2	-	High phosphorus level but no sewage indicators
18978.00	Off Hingham St, upstream of Western Ave Bridge.	Charles River MA72-36	High	10/1/19	70.9	1.08	7.09	0.5	0.1	0.00	0.00	50	0.075	-	-	6.5	<1.6	-	Clear flow, no odor	
19116.00	Off Memorial Dr, upstream of Anderson Memorial Bridge.	Charles River MA72-36	High	10/7/19	70.9	3.58	7.45	1.9	**0.8**	0.00	0.00	**270**	0.161	-	-	7.2	<1.6	-	-	Results exceed the sewage indicator criteria, and ammonia higher than expected stormwater values indicates some follow up should be done before moving to potential wet weather sampling.
14328.00	Off Memorial Dr, downstream of Eliot Bridge.	Charles River MA72-36	High	10/7/19	70.2	3.19	6.72	1.7	**3.0**	0.00	0.00	**240**	0.285	-	-	6.0	<1.6	-	-	Results exceed the sewage indicator criteria, and ammonia higher than expected stormwater values indicates some follow up should be done before moving to potential wet weather sampling.
19075.00	Off Greenough Blvd, across the street from Cambridge Cemetery.	Charles River MA72-36	High	10/15/19	60.6	1.23	7.60	0.6	0.0	0.00	0.00	70	0.044	-	-	7.6	<1.6	-	Clear flow, no odor	
19062.00	Off Greenough Blvd, near intersection with Grove St.	Charles River MA72-36	High	10/16/19	58.3	1.87	7.63	0.9	0.0	0.00	0.00	10	0.02	-	-	13.9	<1.6	-	Clear flow, no odor	
34281.10	From Community Rowing, near Daly Field.	Charles River MA72-36	High	10/16/19	66.0	1.67	7.12	0.8	**0.8**	0.00	**0.25**	<10	0.066	-	-	5.8	<1.6	-	Clear flow, no odor	
18989.00	From 304 Pleasant St.	Charles River MA72-07	High	10/21/19	64.0	1.15	6.86	0.6	0.0	0.00	0.00	**390**	0.052	-	-	-	-	-	Cloudy flow, no odor	

Outfall ID	Location	Receiving Waterbody Name and ID	PY 1 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***> 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
26953.00	From parking lot near intersection of Moody St and Pine St, downstream of Moody St bridge and dam.	Charles River MA72-07	High	10/21/19	63.1	1.62	7.17	0.8	0.0	**0.16**	0.00	10	0.020	-	-	-	-	-	Clear flow, no odor	
26463.00	Upstream of Newton Street Bridge.	Charles River MA72-07	High	10/21/19	61.3	0.18	7.66	0.0	0.0	0.00	0.00	<10	0.028	-	-	-	-	-	Clear flow, no odor	
37369.60	Off Nonantum Rd, upstream of North Beacon St bridge.	Charles River MA72-36	High	10/21/19	72.1	2.13	6.97	1.1	**0.8**	0.00	**0.25**	20	0.116	-	-	7.6	<1.4	-	Clear flow, rotten eggs/hydrogen sulfide odor	
19155.00	Off Nonantum Rd, upstream of North Beacon St bridge.	Charles River MA72-36	High	10/21/19	65.8	2.95	8.35	1.5	0.1	0.00	**0.50**	**280**	0.044	-	-	8.5	<1.4	-	Clear flow, no odor	Results exceed the sewage indicator criteria, and surfactants higher than expected stormwater values indicates some follow up should be done before moving to potential wet weather sampling.
157856.08	Off Greenough Blvd, downstream of Arsenal St bridge.	Unnamed Tributary MA72-32	High	10/21/19	58.5	1.52	7.28	0.8	0.2	0.00	0.00	**330**	-	-	-	-	-	-	Cloudy flow, no odor	
21261.00	From Daly Field.	Charles River MA72-36	High	10/22/19	61.9	0.32	7.40	0.1	0.1	0.00	**0.25**	<10	0.035	-	-	7.4	<1.4	-	Clear flow, no odor	
19114.00	Off Nonantum Rd, near Daly Rink. Receiving flow from MassDOT (I-90).	Charles River MA72-36	High	10/22/19	59.9	2.07	7.14	1.1	0.2	0.00	**0.50**	<10	0.042	-	-	7.5	<1.4	-	Tea/coffee cloudy flow, musty odor	

Outfall ID	Location	Receiving Waterbody Name and ID	PY 1 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***> 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
11920.00	Off Charles River Rd, near Watertown Riverfront Park.	Charles River MA72-36	High	10/22/19	62.4	1.73	7.05	0.9	0.1	**0.04**	**0.25**	10	0.069	-	-	8.4	<1.4	-	Clear flow, no odor	
666667102.00	Off Nonantum Road near Dr. Paul Dudley White Bike Path	Charles River		6/4/2020	24.5	1965	8.76	1.2	0.0	0.00	0.00	50	0.080	-	-	8.50	-	-	Clear flow, No Odor	
23957.00	Off Alewife Brook Parkway near Alewife Greenway Bikepath	Alewife Brook MA71-04	High	5/28/2020	20.1	2210	7.69	1.1	0.0	0.00	0.00	30	0.039	-	-	12.60	-	-	Clear Flow, No Odor	
21906.00	Off Alewife Brook Parkway near General Park	Alewife Brook MA71-04	High	5/28/2020	21.9	2760	7.5	1.4	0.1	0.00	**0.25**	**1,100**	0.059	-	-	10.89	-	<2	Clear Flow, Sheen/Scum Present, No Odor	
22035.00	Off Alewife Brook Parkway near Dilboy Field	Alewife Brook MA71-04	High	6/1/2020	16.6	630	8.37	0.4	**3.0**	0.00	0.00	-	-	-	-	9.28	-	<2	Clear Flow, Sheen/Scum Present, No Odor	
22531.00	Off Alewife Brook Parkway near Dilboy Field	Alewife Brook MA71-04	High	6/3/2020	22.1	2180	8.47	1.4	0.2	0.00	**0.50**	**7,000**	-	-	-	6.90	-	-	Clear Flow, No Odor	Results exceed the sewage indicator criteria, and surfactants higher than expected stormwater values indicates some follow up should be done before moving to potential wet weather sampling.
22723.00	Off Mystic Valley Parkway near Mystic River Reservation	Mystic River MA71-02	High	6/3/2020	22.4	1136	7.86	0.6	0.1	**0.18**	0.00	-	0.062	<0.004	-	8.42	-	16	Clear Flow, No Odor	
30341.00	Off Mystic Valley Parkway near Mystic River Reservation	Mystic River MA71-02	High	6/3/2020	20.1	1627	8.91	1	0.0	0.00	**0.25**	70	0.040	<0.004	-	8.90	-	-	Clear Flow, No Odor	

Outfall ID	Location	Receiving Waterbody Name and ID	PY 1 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***> 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
30601.00 (MH30597.00)	Off Mystic Valley Parkway near the I-93 Interchange	Mystic River MA71-02	High	6/3/2020	17.3	1539	6.89	0.8	2	**0.26**	0	-	-	-	-	3.84	-	-	Tea/coffee color flow, no odor	
30956.00	Off Mystic Valley Parkway near Mystic River Path	Mystic River MA71-02	High	6/4/2020	20.3	1027	8.25	0.6	0.2	0.00	**0.25**		0.045	<0.004	-	9.50	-	16	Clear Flow, No Odor	
30948.00 (MH30949.00)	Off Fellsway near Fellsmere Rd and Savin St	Fellsmere Pond MA71016	High	6/11/2020	19.8	1039	7.02	0.5	0.1	**0.08**	0	<10	0.071	-	<10	5.24	-	0.071	clear flow, no odor	
16057.00	Off Shore Drive near Fellsway	Mystic River MA71-02	High	6/10/2020	17.5	1430	7.79	2.4	0.2	**0.29**	**2.00**	**2,100**	0.074	<0.004	-	10.28	-	-	Clear Flow, No Odor	Results exceed the sewage indicator criteria, and surfactants and chlorine higher than expected stormwater values indicates some follow up should be done before moving to potential wet weather sampling.
23845.00	Off Lynn Fells Parkway	Bennetts Pond Brook MA93-48	High	6/16/2020	19.1	521	7.41	0.2	0.0	0.00	0.00	-	-	-	1,800	10.94	-	-	Clear Flow, No Odor	
23587.00	Off Fellsway E near Spot Brook	Malden River MA71-05	High	6/16/2020	16	555	7.05	0.3	0.0	0.00	0.00	60	0.020	-	-	10.16		<2	Clear Flow, No Odor	
15562.00	Off East Border Road near Fellsway East	Malden River MA71-05	High	6/16/2020	18.9	461	7.92	0.2	0.0	0.00	0.00	**1,000**	0.034	-	-	11.08		<2	Clear Flow, No Odor	
22556.00	Off Fellsway W near I-93	Mystic River MA71-02	High	6/16/2020	17.5	992	7.18	0.4	0.0	**0.12**	0.00	**1,700**	0.037	-	-	10.53		<2	Clear Flow, No Odor	
22554.00	Off Lynn Fells Parkway near Bellevue Golf Course	Bennetts Pond Brook MA93-48	High	6/18/2020	17.4	790	6.81	0.4	0.0	**0.10**	**0.25**	**>80,000**	-	-	2,700	-		-	Clear Flow, Musty odor	Results exceed the sewage indicator criteria, and high chlorine and surfactants with observation of cloudy flow indicates some follow up should be done before moving to potential wet weather sampling.
666667014.00	Off Mystic Valley Parkway	Mystic River MA71-02	Low	6/3/2020	19	1825	7.35	0.9	0.4	**0.22**	**0.25**	**1,900**	0.231	0.007	-	8.75		-	Clear Flow, No Odor	Moved to high priority due to sewage indicator criteria and high chlorine and surfactants.

Outfall ID	Location	Receiving Waterbody Name and ID	PY 1 Outfall Priority	Sample Date	Temp (°F)	Conductivity (µS/cm)	pH	Salinity (ppm)	Ammonia (mg/L)	Chlorine (mg/L)	Surfactants (mg/L)	E. coli (MPN/ 100 mL)	Total Phosphorus (mg/L)	Arsenic, Total (mg/L)	Fecal Coliform (CFU/100 mL)	Dissolved Oxygen (mg/L)	Oil and Grease (mg/L)	Total Suspended Solids (mg/L)	Visual/ Olfactory Observations	Notes
Sewage indicator [a]									***≥0.5 mg/L***	***> 0.02 mg/L***	***≥0.25 mg/L***	***235 colonies/ 100 mL*** [b]							**Olfactory or visual evidence**	
Low Priority: Move on to Catchment Investigation																				
666667016.00	Off Alewife Brook Parkway near Dilboy Field	Alewife Brook MA71-04	Low	6/3/20	19.2	1453	8.31	0.9	0.2	0.00	0.00	**280**	0.034	-	-	8.79		-	Clear Flow, Sheen/Scum Present, No Odor	
666667144.00 (MH 13384)*	Off Woodland Rd	Spot Pond MA71039	-	6/15/20	21	1344	8.16	0.8	0.4	0.1	0.25	-	-	-	-	-	-	-	clear flow, no odor	Taken at upstream manhole, not outfall. Both inlets flowing, sample taken from outlet.
666667144.00 (MH 13474)*	Off Woodland Rd	Spot Pond MA71040	-	6/15/20	17.3	599	7.2	0.3	0	0	0	-	-	-	-	-	-	-	clear flow, no odor	Taken at upstream manhole, not outfall. N and S inlets flowing, sample taken from outlet.

Notes: Data shown in bold print exceed MS4 Permit indicators of likely sewage input individually.

*Outfall location was mapped July 2020, no PY 1 Outfall Priority was assigned.

a. MA MS4 General Permit. https://www3.epa.gov/region1/npdes/stormwater/ma/2016fpd/final-2016-ma-sms4-gp.pdf

b. Massachusetts Surface Water Quality Standards. https://www.mass.gov/doc/314-cmr-4-massachusetts-surface-water-quality-standards/download